

CLAIMS

We claim:

- 5 1. A microparticle storage and delivery device for allowing an individual to selectively dispense a dosage of a microparticle, comprising:
 - a string loaded with a plurality of dosages of the microparticle;
 - a storage container for holding the string, the storage container having a first open end and a second opposite end;
 - 10 a biasing structure for urging the string toward the open end; and
 - an actuator selectively engageable with the string to urge a dosage of the microparticle from the open end of the storage container.
- 15 2. The device of claim 1 wherein the string includes a hydrogel having the plurality of dosages contained therein.
- 20 3. The device of claim 1 further comprising a hollow actuator housing having an interior for slidably receiving the actuator therein and an open terminal end, the open end of the storage container communicating with the interior of the actuator housing.
- 25 4. The device of claim 3 wherein the interior of the actuator housing includes a staging section and a porous section, the open end of the storage container communicates with the staging section of the interior of the actuator housing.
- 30 5. The device of claim 4 further comprising a first valve for isolating the porous section from the staging section of the interior of the actuator housing.
6. The device of claim 5 further comprising a second valve for selectively closing the open end of the actuator housing.

7. The device of claim 1 further comprising a non-porous plug disposed in the storage container between the string and the biasing structure.

8. The device of claim 1 wherein second end of the storage container is porous.

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9. The device of claim 1 wherein the biasing structure includes a hydrogel element, the hydrogel element expanding in response to a fluid passing through the second end of the storage container.

10. A dispenser implantable in the human body for allowing a user to selectively dispense a dosage of a microparticle, comprising:

a storage container for holding a plurality of dosages therein; and

an actuator operatively connected to the storage container, the actuator causing
5 the release of a single dosage of the microparticle from the storage container in response to actuation by a user.

11. The dispenser of claim 10 wherein the actuator includes a series of hydrogel triggers, one of the hydrogel triggers expanding in response to actuation by the user.

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12. The dispenser of claim 11 further comprising a plunger operatively engagable with the plurality of dosages, the plunger urging a single dosage from the storage container in response to expansion of the one of the hydrogel triggers.

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13. The dispenser of claim 10 further comprising a string formed from a hydrogel, the hydrogel having the plurality of dosages of the microparticle contained therein.

14. The dispenser of claim 13 further comprising a biasing structure for urging
20 the string from the storage container.

15. The dispenser of claim 14 further comprising a non-porous plug disposed in the storage container between the string and the biasing structure.

25 16. The device of claim 10 further comprising a hollow actuator housing having an interior for slidably receiving the actuator therein and an open terminal end and wherein the storage container has a first end communicating with the interior of the actuator housing and a second end.

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17. The device of claim 16 wherein:

the interior of the actuator housing includes a staging section and a porous section; and

5 the storage container communicates with the staging section of the interior of the actuator housing.

18. The device of claim 17 further comprising:

10 a first valve for isolating the porous section from the staging section of the interior of the actuator housing; and

a second valve for selectively closing the open end of the actuator housing.

19. The device of claim 16 wherein second end of the storage container is porous.

20. A method of dispensing a dosage of a microparticle to an individual, comprising the steps of:

providing a dispenser;

loading the dispenser with a first plurality of dosages of the microparticle;

5 implanting the dispenser in a body; and

selectively releasing one of the first plurality of dosages.

22. The method of claim 21 comprising the additional step of encapsulating the
10 first plurality of dosages of the microparticle in a hydrogel.

23. The method of claim 21 wherein the dispenser includes a storage container for receiving the first plurality of dosages therein.

15 24. The method of claim 23 wherein the step of selectively releasing one of the first plurality of dosages includes the additional step of urging a single dosage from the storage container.

25. The method of claim 21 comprising the additional step of isolating the first
20 plurality of dosages of the microparticle in the dispenser from the interior of the body after the step of implanting the dispenser in a body.

26. The method of claim 21 comprising the additional step of reloading the
dispenser with a second plurality of dosages of the microparticle after the first plurality of
25 dosages is released into the body.